

REMARKS/ARGUMENTS

Claims 33-48 are presently pending in this application. Claims 1-32 have been canceled. Claims 33-48 are new.

Previously pending claims 15-32 have been replaced by new claims 33-47. Claim 33 is an amended version of now-canceled independent claim 15, and independent claim 47 did not previously have a counterpart. The remaining dependent claims 34-46 replace now-canceled claims 16-32.

All claims, including independent claim 15, except for claims 16 and 23 (which are replaced by new claims 34 and 41) and claims 29 and 31 (which were dropped entirely), were rejected for anticipation over the same May reference (US 2003/0176901) and for precisely the same reasons as these claims were rejected in the last Office Action of November 29, 2009. Since independent claims 33 and 47 are the most important claims, applicant will address these claims and why they are not anticipated by May in detail below.

The present application is concerned with preventing a muscle, which has been continuously stimulated with electrical stimulation, from becoming accustomed to the stimulation pattern. To prevent the muscle from becoming accustomed to the electrical stimulation, the present invention as defined by the pending claims requires that the offset relative to the T-wave is varied and that either all of the remaining parameters listed, or a selection of these parameters, are to be intentionally varied in accordance with a predetermined pattern, or randomly within pre-specified limits, in the course of a long treatment. This prevents the muscle affected by the electrical stimulation and the body's response to the muscle contraction from getting used to the fixed pattern of electrical stimulation.

In humans the heart rate lies in the range from approximately 40 beats per minute (bpm) up to around 200 bpm when exercising, which corresponds to approximately 2/3 Hz to 3 Hz. For different types of mammals the heart rate ranges from approximately 20 bpm (e.g. whales) up to around 450 bpm (e.g. hamsters), such that one can say that the frequency of the administered pulses or groups of pulses is in the range of 1/3 Hz to 8 Hz, if the stimulation is continuously administered using the electrotherapy apparatus of the present invention.

The electrotherapy apparatus of the present invention is adapted to vary the offset of the stimulation pulse relative to the T-wave and at least vary the amplitude, the duration, or if a small group of pulses is administered relative to the T-wave these are administered using a repetition frequency appropriate for the relevant mammal (i.e. in the range of 1/3 Hz to 8 Hz), even if the group of pulses may use a different pulse repetition frequency for the pulses of each group during the duration of that stimulation. However, the group repetition frequency of the group of pulses is still only administered in the mentioned frequency range of 1/3 Hz to 8 Hz.

In contrast thereto, May discloses “an electro-therapeutic device for the treatment of the preferably human body with electrical currents having a defined frequency and amplitude” (column 1, lines 14-16 of May). The only reference to a human heart in May is in paragraph [0038] of the publication, which discloses the selection of the frequency range of the stimulation used in May and which discusses this frequency range relative to cardiac ventricular fibrillation. The frequency range used in May ranges from 1 kHz up to 100 kHz as recited in claim 1 of May as well as in paragraph [0037] thereof.

New independent claim 33, which replaces claim 15, includes the claim limitation that “said electrical stimulation is effected at a time offset relative to a predicted end of a T-wave of an electrocardiogram derived from said person or mammal ... in an associated microprocessor, or randomly in accordance with a random number generator”

In the Final Rejection of June 9, 2010, the Examiner agreed with applicant’s position set forth in the Amendment filed on February 24, 2010 that May fails to disclose the claim limitation pertaining to the stimulation pulses being provided at a time that is offset relative to the predicted end of a T-wave of an electrocardiogram derived from the person or mammal. Claim 15 was nevertheless rejected because it was not properly limited in this regard.

New claim 33 has been narrowed relative to claim 15 and no longer recites that at least one of amplitude, pulse repetition frequency, duration and offset are varied, which essentially was the basis for rejecting claim 15. Claim 33 requires that all of the listed limitations are varied. This is not disclosed by May, as was recognized on page 5 of the Final Rejection.

Thus, applicant submits, claim 33 is not anticipated by May.

New independent claim 47 closely tracks claim 33, the difference between the two being that rather than being limited to a time offset, claim 47 is limited to a pulse repetition frequency.

In the Final Rejection, the Examiner also agreed with applicant's position as set forth in the Amendment filed February 24, 2010 that May does not teach the claimed frequency range since May teaches a person of ordinary skill in the art not to provide stimulation pulses in a range relative to cardiac ventricular fibrillation. However, the Examiner's interpretation of May's disclosure in paragraph [0037] is in error.

The frequency range disclosed in paragraph [0037] of May is "from 1 to 100 kHz", which means a frequency between 1000 Hz and 100,000 Hz, 1 kHz being the same as 1000 Hz. The scientific notation of "1 to 100 kHz" therefore means a frequency ranging from 1000 Hz to 100,000 Hz. Even the wording in May makes this clear because, if May had intended to refer to a frequency range of from 1 Hz to 100 kHz, the notation would have to read "1 Hz to 100 kHz". Thus, applicant's position as set forth in the paragraph bridging pages 7 and 8 of the Amendment filed February 20, 2010, that May's frequency range of between 4096 to 32,768 Hz is completely outside the frequency range of 1 to 1000 Hz, is correct and demonstrates that May is not directed to and is not capable of curing adverse conditions of the human or mammalian heart.

The assertion on page 6 of the Final Rejection that May discloses a "middle frequency range of from 1 to 100 kHz, thus providing a frequency within the claimed frequency range", is in error. May's range is entirely outside the claimed ranges, and any frequency rate between 20 and 1000 Hz does not constitute a frequency in the middle frequency range of May.

May therefore does not disclose and does not anticipate new claim 47.

New claim 48, which depends from new claim 47, specifically recites that the pulse repetition frequency is in the range between 20 and 1000 Hz, well outside the range set forth in paragraph [0037] of May.

Thus, claim 48 is not anticipated by May and is allowable over May in its own right.

Dependent claims 34-36 and 48 are directed to independently patentable features of the present invention. These claims are further allowable because they depend from allowable parent claims.

CONCLUSION

In view of the foregoing, applicant believes all claims now pending in this application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (415) 576-0200.

Respectfully submitted,


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